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## Clays and Coals of Muskingum County.

BY B. WHEELER.

READ AT COLUMBUS MEETING.

### *Ohio Institute of Mining Engineers:*

Gentlemen: Your letter received, and in reply, I must say you are asking of me something I never have done—that is to write an article to be read in public or published. I will, however, write you a letter giving a few facts as gained by my own observation, and will quote a few from the writings of more experienced men. Of course I can touch but lightly on each subject.

I will commence by saying that the building stone in this, Muskingum county, are not surpassed, I think, in the State. The brown and green colored sandstone, so much sought for, for public as well as private buildings, abounds in immense quantities, as also all varieties of sand and freestone. Within this county there exists large bodies of molders' sand, potters' clay, brick clay, fire clay, karlin, and other clays which have become articles of commerce. The quantity of these clays and sand is inexhaustible. The amount shipped from Zanesville during the past years has made no impression upon the vast deposits known to exist. Molders' sand in immense quantities is shipped all over the West, North and South. The demand for pressed red and common brick for building and ornamental purposes, is far beyond the supply. They are shipped all through the West to Helena, Montana, and California, as well as East to New York City. When I tell you the three brick yards in Zanesville turn out between thirty-five and forty millions brick per year, and cannot supply the orders, you can form some idea of the quality of the brick, as well as of the clay they are made from. The Zanesville tile, for flooring, wainscoting, and all kinds of ornamental purposes, has no superior, and is the most extensive work of the kind in the United States. Potters' ware, in an unlimited variety, is manufactured in this county, and shipped to every State and Territory in the Union. We feel that the clay work of this county is but beginning; in fact, the amount of clay has never been known until now, if we know yet.

T. B. Townsend, in prospecting for fire clay, found, but a little way under the surface, a vein twenty to twenty-five feet thick, of which he is now making vitrified brick for street paving, and is putting down one mile of the pavement in Zanesville. At Adamsville, and in the vicinity, in this county, there exists mineral springs—chalybeate waters—some very strong, and possessing medicinal properties. They are, as yet, inaccessible from the

want of railroads. Iron ore has not been discovered in paying quantities, I believe, although it is so claimed by some.

Muskingum county is underlaid with coal. To speak of it as it deserves, would be to write a treatise on Geology, which I am not able to do, and I do not think you wish it. I will, however, speak of a few facts. J. W. Foster (see Geological Report of Ohio, 1837), in speaking of the coal measures of Muskingum county, says there is sufficient coal in this county alone to supply the population of our State with fuel for 250 years. Prof. Orton says Muskingum county, as pointed out by Andrews, has the greatest vertical scale of any coal-measure county in Ohio. The coal field of Muskingum county is greater in extent, more uniform and continuous than in any other portion of the State. The principal coal seam of this county is known as No. 6, or Middle Kittanning seam. Prof. Orton says of it (see vol. 5, p. 874, State Geological Survey), the Middle Kittanning seam, known as the Upper Zanesville coal, or No. 6, has already been shown to be the most remarkable seam of the Lower Coal Measure of Ohio in steadiness and persistency. It is a bright, cubical coal, mining in small or medium-sized blocks; is good steam coal, and highly valued as grate coal in Zanesville, and is used altogether for gas. It is low in ash—less than four per cent. This is the most important of the coal formation, the range of thickness being from three and one-half to four feet. No. 5, or Middle Kittanning seam, No. 7, or Upper Freeport, six to seven feet thick, found in the northeast section of the county, and the other coal seams known as Alexandria and Sonora, have been worked but little, and only for the neighborhood. The area of this entire coal field is still substantially intact. We are safe in saying no like coal area can elsewhere be found in Ohio, or affording greater inducement to the coal operator. We invite coal experts to examine the coal and induce the operator to locate.

I would again call your attention to the immense wealth of our clays. The heavy veins of fire and plastic clay lying under the coal can be worked into sewer and drain tile, fire brick, vitrified brick, and the coal dumped from the mines into the kilns, while on top of the same hill is the red clay and molder's sand. All kinds of clay work can be manufactured in Muskingum county cheaper than in any other county in the State.

Now, gentlemen, if you find this worth reading or publishing you are welcome to do so. I will guarantee the truth of all that is said in the above. If possible, I hope to be with you January 10.

## DISCUSSION OF MR. WHEELER'S PAPER.

Mr. Haseltine: It seems no one feels like discussing Mr. Wheeler's paper, and I do not wish to do it in the shape of a discussion. I am very glad he came here and brought his valuable paper with him. I had the pleasure of a few short trips through Muskingum county this summer, and I must say I was amazed at the value of their clays. I saw the finest clay and the finest enameled brick I ever saw. The clay works so finely that they could delineate almost any object on it. I noticed lion's heads and things of that sort in which from the eyebrow to the tip of the nose everything about it was burned sufficiently hard and annealed so that it would stand the weather. It struck me that the future of Muskingum county in the manufacture of that variety of articles certainly was equal if it did not excel that of any other part of the State. I did not pay so much attention to the brick for paving purposes, or clay for that purpose, but for building or ornamental work I never saw anything in my life that it seemed to me would work out and give such satisfaction as the clays in and about Zanesville and Muskingum county.

The Secretary: Mr. President, I can say for the coal of Muskingum county that I do not think we have any adequate idea of the amount and quality of the coal there is in that county. The coal business in Muskingum county has been so far confined to little local banks in and around Zanesville, the product of which has been hauled in wagons to Zanesville and there used, and I think by reference to my last reports it will be found that Muskingum county, in this little, insignificant way of mining, lacking shipping facilities and having comparatively no railroad trade, yet if my recollection is right, I think there are some seven or eight coal producing counties in the State that are below Muskingum county in its product and in the number of miners employed. The county is now being developed by railroads running through it. The extension of the Columbus and Eastern and the Muskingum River Road, and now by the Shawnee and Muskingum River Road running from Shawnee to Zanesville, each of which has developed more or less of that territory. While I have not been down to examine it yet I am told that down the river along the line of the Muskingum River Road they have found larger deposits of coal than they have ever discovered before in the county, and I think Mr. Wheeler is right when he says that the future of Muskingum county, so far as the coal trade at least is concerned, is exceedingly bright, and I look for an early and rapid increase in the coal product in Muskingum county. The only thing they have lacked for the full development of the coal trade has been railroad communication. The county has got that now, and is rapidly increasing it. The road from Killbuck down by

Dresden Junction to Zanesville gives them another outlet that they did not have before. In fact they had nothing before but the B. & O. and I think that Mr. Wheeler is warranted in all he assumes and prophesies as regards the coal measures and the extent of them in Muskingum county.

Mr. Wheeler: We are looking there now more at Zanesville to the development of the clays. We have there a vein of clay of twenty-five feet perpendicular face with enough of grit in it to make it vitrify, and on top of that is a nine foot vein of fire clay, making thirty-four feet, as high as this building nearly, perfectly solid, without a seam except a division between these two veins of clay. We want to pave all this country with that kind of brick.

Mr. Howells: I will ask Mr. Wheeler whether this thickness of clay has to be mined, or is obtained from the surface?

Mr. Wheeler: They are stripping it now.

Mr. Howells: But if the business increases in the future?

Mr. Wheeler: Well, the way would be to drift in from the hills.